

§ 7.44

30 CFR Ch. I (7–1–00 Edition)

§ 7.44 Technical requirements.

(a)(1) Battery boxes and covers constructed of AISI 1010 hot rolled steel shall have the following minimum thicknesses based on the total weight of a unit of the battery assembly charged and ready for service:

| Weight of battery unit | Minimum required thickness |
|--------------------------|----------------------------|
| 1,000 lbs. maximum | 10 gauge or 1/8" nominal |
| 1,001 to 2,000 lbs | 7 gauge or 3/16" nominal |
| 2,001 to 4,500 lbs | 3 gauge or 1/4" nominal |
| Over 4,500 lbs | 0 gauge or 5/16" nominal |

(2) Battery boxes not constructed of AISI 1010 hot rolled steel shall have at least the tensile strength and impact resistance of battery boxes for the same weight class, as listed in paragraph (a)(1) of this section.

(3) Battery box covers constructed of materials with less than the tensile strength and impact resistance of AISI 1010 hot rolled steel or constructed of nonmetallic materials shall meet the acceptable performance criteria for the impact test in § 7.46. Nonmetallic covers shall be used only in the battery assembly configuration in which they pass the impact test.

(4) Nonmetallic materials for boxes and covers shall—

(i) Be accepted by MSHA as flame-resistant material under part 18 of this chapter; and

(ii) Meet the acceptable performance criteria for the deflection temperature test in § 7.47.

(b) All insulating material shall have a minimum resistance of 100 megohms at 500 volts d.c. and be accepted by MSHA as flame resistant under part 18 of this chapter.

(c) Battery box and cover insulating material shall meet the acceptable performance criteria for the acid resistance test in § 7.48.

(d) Covers shall be lined with insulating material permanently attached to the underside of the cover, unless the cover is constructed of insulating material.

(e) Covers, including those used over connector receptacle housings, shall be provided with a means of securing them in a closed position.

(f) Battery boxes shall be provided with vent openings to prevent the accumulation of flammable or toxic gases or vapors within the battery assembly.

The size and location of openings shall prevent direct access to cell terminals and other uninsulated current carrying parts. The total minimum unobstructed cross-sectional area of the ventilation openings shall be no less than the value determined by the following formula:

$$\frac{(N)(R)}{950} = M$$

N = Number of cells in battery box.

R = Rated 6 hour battery capacity in ampere hours.

M = Total minimum ventilation area in square inches per battery box.

(g) Battery boxes shall have drainage holes to prevent accumulation of water or electrolyte.

(h) Battery cells shall be insulated from the battery box walls, partitions and bottom by insulating material, unless such part of the battery box is constructed of insulating material. Battery box wall insulating material shall extend to the top of the wall.

(i) Cell terminals shall be burned on, except that bolted connectors using two or more bolts may be used on end terminals.

(j) Battery connections shall be designed so that total battery potential is not available between adjacent cells.

(k) Cables within a battery box shall be accepted by MSHA as flame resistant under part 18 of this chapter or approved under subpart K of this part. The cables shall be protected against abrasion by insulation, location, clamping, or other effective means.

(l) When the battery plug and receptacle are not located on or within the battery box, strain on the battery terminals shall be prevented by a strain-relief device on the cable. Insulating material shall be placed between the strain-relief device and cable, unless the device is constructed of insulating material.

(m) At least a 1/2-inch air space shall be provided between the underside of the battery cover and the top of the battery, including the terminals and connectors.

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